PAPANTONATOS
Pumps service & engineering

PXFLOW

Operating instructions for PXFLOW sewage pumps

Standard units

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Identification plates

General description

The PXFLOW submersible sewage pumps can be used in a variety of residential, commercial and industrial applications such as:

- Sewage System
- Flood and Pollution control
- Dewatering / Effluent
- Farms
- Hospitals
- Trailer Courts
- Hotels

PXFLOW pumps are subjected to a thorough inspection before leaving the factory and equipped with operating instructions for fitting, starting, care etc. which conform to international safety regulations.
These instructions describe the procedures to be used for fitting, operation and maintenance of standard submersible waste water pumps.

Applications

This starting & operation manual are applicable to the electric driven submersible waste water pumps specified on the front page. The pumps are designed to be used for pumping raw sewage water with solid contents. The pumps are suitable for heavy duty drainage applications and clean water too. The manufacturer guaranties that the new pump airborne noise level do not exceed 70 db(A) when submerged. For dry installation the corresponding level is 75 db(A). Be aware that under wrong operated duty points, noise level might be higher.

Caution! This range of pumps is forbidden to handle in flammable liquids nor used in explosive environment.

Do not start the pump if any parts belonging to the pump are missing.

WARNING! If humans should be in contact with the pumped liquid e.g. construction sites, lifting stations etc. a grounded connection including an earth leakage detector must be used.

Never install the pumps in swimming pools, special regulations apply.

Product description

Limitations

Immersion depth to max 20m (66 ft).
Media temperature up to 40 °C (115 °F).
Higher media temperature on request.

Pump models

Example: PX3-150.X VX3 6-300

PX3 : indicate module range
150 : standard outlet discharge in mm
X : indicate version of volute
V : Vortex impeller or
C : Channel impeller
X : indicate version of impeller, more than one X can appear to indicate other types.
3 :Family pumps
6 : number of poles (rpm)
e.g. 6=960 rpm
300 : diameter of impeller in mm

Motor

3 phase squirrel cage induction motor for 50 Hz, degree of protection IP68
Insulation class :F Standard, H Optional

Motor protection

All stators except PX0 are equipped with 3 built-in thermal switches and are connected in series which opens at 135 °C and closes at approx 90 °C and are marked F1 & F2 control cable. To maintain warranty on the pumps, these thermal switches must be connected in series to control circuit of control panel.

Cooling system

Models PX0, PX1 are cooled under operation by the surrounded liquid and cannot be installed as dry pit installation.

Models PX2, PX3 are standard equipped with a closed internal cooling system in all 3 types of installation.

However if ordered without closed internal cooling system cannot be installed as dry pit

The closed internal cooling system functions as follows:
An internal impeller, located between the two mechanical shaft seal, circulates the cooling liquid in a closed loop through channels to a cooling jacket surrounding the stator housing.
Thus the heat generated by the motor, is transferred to the cooling liquid and finally dissipated to the pumped liquid via a cooling flange (heat exchange), without any physical contact by the pumped sewage media.

Coolant: 70% water and 30% propylene glycole

Moisture sensor

All pumps except PX0 and PX1-65.0 are supplied with a moisture sensor.

The humidity probe is made of aluminum and is placed at the oil chamber and connected in the upper part of stator housing. By this design water is detected in two compartments (oil chamber and cable terminal board) by one sensor.

In the control cable the moisture winding is marked D. The control cable should be connected to a relay (optional) in the control panel, which is activated by a decrease in resistance to ground. Set the alarm between 20 - 100 kOhm. Voltage output applied to the moisture cable 12 - 24 V AC

Power Cable

The pumps are standard equipped with 10m electric cable of the type H07RNF. If longer cable is required, voltage drop must be taken in consideration. Standard cable dimension is given on the 4th page of this manual.

Handling

When need of transportation, the pumps must be stored properly. Special attention must be taken at the cables which cannot stand rolling heavy parts. All pumps can be stored vertical or horizontal.

Always protect cable ends from moisture and water too, so that no moisture will penetrate into the cable.

WARNING! Never start up the pump without impeller. This will damage (in a few seconds) the O-ring that seals between the rotor-shaft and the sleeve of the mechanical seal cartridge. Both sleeve and rotor shaft could also be damaged due to excessive friction!.

Before lifting up the pump checks if the handle on the pump is fixed. Always use the lifting handle, do not use the cables or discharge hose. All fixing screws and bolts must be securely fasted before lifting. Human injury may appear if above is not secured.
After a long period of storage the pump must be inspected carefully. Rotate the impeller by hand before start-up and check carefully seals and cable entry

Installation

When installing the pump, reduce the risk of accidents, be aware that the machine is

WARNING! The pump unit doesn't go with the base.
The base as also others hydraulics accessories for the installation and the connection of the pump with the system can be supplied from our company.

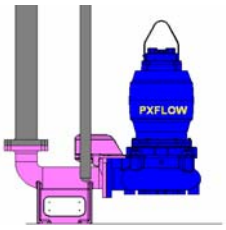
extremely heavy and contain electrical open wires.

Before starting the installation, secure that all screws for the lift handle, stator and volute fixing bolts are safety tighten.

Lifting chains, cranes etc. must always be designed to encounter without cracked the weight of the pump. For safety reasons never walk under suspended load.

Discharge connection bracket - DCB

Place the base elbow (DCB) at the bottom of the sump. If one pump is installed, place the pump in the center of the tank. Fit the guide tubes to the upper guide bracket so they are in an accurate vertical and parallel position to each other.

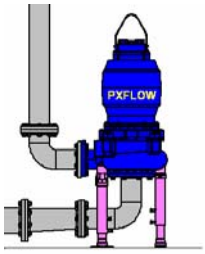


Connect the discharge pipe to the DCB and mount eventual the pipe with a non return valve and gate valve which suits the flow velocity from the pump.

The lifting tackle must be installed directly at the point above the center of gravity of the pump while the pump automatically will release from the DCB (which is appropriate shaped for this purpose) when lifted vs. fasten on the DCB when lowered.

Dry pit installation

PX2 and PX3 modules can be installed dry and so can be supplied with adjustable support. The support consists of three legs of telescopic type. The suction pipe can be connected in either direction by changing over the location of the legs. The legs after adjusting are fixed with two screws to lock the position.



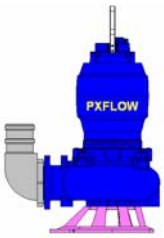
Secure the legs by bolting in concrete.
The suction connection pipe can be connected vertical under the pump. The motor unit is easier to remove and fit in place again if the suction pipe is equipped with a drain valve. This can be opened when the motor is going to be fitted or removed.

The discharge pipe should be mounted with a drain as well, in order to let out air under the first start-up. Afterwards it can be fitted with a manometer to measure the pressure.

Before start, check carefully the cables for defects and check the level of coolant in the cooling jacket.

Portable version / installation

This version needs extra attention while operating. The pump can be supplied with a support ring.



Place the pump on a firm surface and keep the cables straight, secure that cable are not nipped.

WARNING! Never remove the support ring, human contact might occur and make injury.

WARNING! For the safety operation it is necessary to have succeeded the appropriate support of the pump unit as do not have any accident mainly at the start of the pump.

If risk of overturning, place and fit the pump on a steel plate.
When hoses are used as discharge connection, remember that friction losses are higher than in a pipe and flow might be less than expected.

Venting of the volute

After lowering the pump into a sump full of water, an air lock may occur in the volute and cause pumping problems. In this case, raise the pump in the medium and then lower it again. If necessary repeat this venting procedure.
If the problem insists then we can drill a hole 2-3mm on the vent's plug.

Especially for the pumps of dry installation it is necessary to venting them again (when have been installed at the final position) by the appropriate hole at the volute of the pump.

Electrical connections

The electrical installation must be inspected by authorized electrician before switching-on.
Make sure that the electrical terminals or starting equipment is installed in such way that it cannot be flooded. The electrical installation must apply to national regulations.
All pumps are supplied with built-in thermal

CAUTION! All electrical equipment must always be earthed (grounded). This applies both to the pump and to any monitoring equipment.

switches in the stator windings. These are marked F1, F2 and must always be connected in series to the control circuit of control panel.

D is connected to a moisture sensor which is located between the oil chamber and stator housing. This sensor should be connected to a conductive liquid level relay in the control panel. An alarm should be given in event of moist. Your local PXFLOW representative can supply you with the conductive liquid level relay (optional).

Make sure that the power supply, voltage, frequency and starting method corresponds to the nameplate data fitted on the pump.

The motor can operate by voltage tolerances at +/- 5%. The motor might be overloaded and burned out if this is exceeded.

About power supply cable, and control cable connections see to motor winding connection schemes in this manual.

- Direct online starting DOL
- Star-Delta starting Y-Δ

Starting equipment on the control panel, must be provided with over current protection sensitive to phase failure. A 3phase asymmetry control relay is recommended, adjusted to 15% phase asymmetry

The power supply should be fused with low-blow fuses.
15 Starts per hour (regularly spaced) are permitted

Replacing the power cable

If the cable has been compressed or damaged it must be replaced to avoid water entry.

When changing the cable always change the rubber joint-ring too, in the entry of it.

Never change dimensions from the original one, as water may enter the motor.

If the same cable is re-used due to any repair work, always cut away a piece at the cable entry in order to seal on a non compressed cable sheath.

For safety reasons the grounded conductor should be longer than the others, these of the phases. If the motor cable is accidentally wrenched off, the earth conductor should be the last to break away from its terminal. This applies to both ends of the cable.

Electromagnetic Compatibility, EMC

The pump does not generate any electric noise EMC, which can infect on other equipment. However, if the pump is power supplied via frequency inverter, power cables might need screening.

The pump apply to directive EN89/336/EEC regarding EMC.

Operation

By the first start-up or after repair, check the rotate direction. At the instant starting the motor will provide a jerk. The pump must always obtain anticlockwise reaction.If the rotation is incorrect, transpose two phases in the electric control panel.

WARNING! Before starting up the pump.
Don't operate the pump before you verify that it has been securely fastened and cannot be tipped over or to spin, especially during the start up.

WARNING! As the pump will pump up to 70% of the nominal flow at wrong rotation never use the visual flow rate to determine the rotate direction. Most times, pump creates heavy noiseand vibration when operates at wrong rotation

WARNING! Do not insert your hand or any other object into the pump volute and impeller if any power supply is connected. Remove physically the cable even if security devices is activated.

Be aware of the starting torque, it may be very strong depending on the size of the pump. Do not hold the pump when checking the rotation. The pump must be heavily supported and never started when hanging in a chain without properly support.

Service and maintenance

CAUTION! Before maintenance and repair work, motor leads must first be completely disconnected from the power supply. Never work on electrical systems during a thunder storm. All work on the electrical system may only be performed by qualified electricians

CAUTION! When the pump or motor section has been laid on side, always secure it with wedges from both sides to prevent it fr rolling away

CAUTION! Before undertaking any service work, make sure that the pump is thoroughly clean, and bear in mind the importance of observing good personal hygiene. Follow your local safety instructions.

Regular inspection and preventive maintenance will ensure more reliable operation. The pump should be inspected every six months or more often if the operating conditions are difficult. The cable should be checked more frequently. For a complete overhaul of the pump, please get in touch with an authorized PXFLOW workshop or your PXFLOW dealer

Inspection

Pump section	Inspection	Action in the event of a fault.
Cables	Check that the sheath is not damaged. Check that the cables are not kinked or nipped.	Fit a new cable. Correct the fault.
Cooling water	Check the cooling water level of coolant	Fill up with cooling liquid.
Visible Parts	Check that all parts are in good condition, and that bolts and nuts are securely tightened.	Replace worn parts. Tighten any loose bolts and nuts.
Impeller/Wear ring	Check that the parts are not worn to such an extent that the pump performance is affected.	Adjust the wear ring.
Shaft seal	Check that the oil is clean and is not mixed with water. See under "Changing the oil".	In the event of slight leakage, change the oil.
Hoses, pipes and valves	Check that the equipment does not leak or is otherwise damaged.	Adjust or replace defective equipment.

Changing the oil

Change of oil is done in the same way on cooled and uncooled pumps. Remove the plug marked "outlet" and let the old oil pour out through the groove under the plug. Discard of any used oil in accordance with local regulations. Fasten the plug so that the lower but not the top O-ring gasket seals. Loosen the plug marked "inlet" and fill up with oil and then fasten both oil plugs. Use oil with same quality and performance as Enerpar M002, white oil.

CAUTION! In the event of inward leakage, the oil housing may be pressurized. When removing the oil plug, hold a piece of cloth over it to prevent oil from splashing.

NOTE! Old oil should be entrusted to an oil disposal company in accordance with local regulation.

Type	P2 Kw	Insulation Class	Nr. of Poles	I - Amp		Motor Eff. %	Cos	Cable DOL n_o /mm^2		Cable Y/Delta n_o /mm^2	
				~1Ph 230 V	~3Ph 400 V			230V	400 - 500 V	230V	400 - 500 V
PX0-37.1	0,65	F Standard Edition H Alternative	2	4	1,5	79,0%	0,95	3x1,5	4x1,5	-	-
PX0-50.2	0,8		2	5	2	80,0%	0,95	3x1,5	4x1,5	-	-
PX0-50.1	1,2		2	7,1	3,1	80,0%	0,95	4x1,5	4x1,5	-	-
PX1-65.0	1,1		4	-	3	81,0%	0,86	-	7x1,5	-	-
PX1-65.0	1,85		2	-	4	81,0%	0,85	-	7x1,5	-	-
PX1-65.0	2,2		2	-	5,5	83,0%	0,85	-	7x1,5	-	-
PX1-80.0	1,5		6	-	3,9	74,0%	0,75	-	7x1,5	-	-
PX1-80.0	2,7		4	-	5,7	80,5%	0,845	-	7x1,5	-	-
PX1-80.0	3,5		4	-	7,4	82,0%	0,835	-	7x1,5	-	12x1.5
PX1-83.0	4		2	-	8,1	82,0%	0,875	-	7x1,5	-	12x1.5
PX1-83.0	5,5		2	-	11,5	81,0%	0,855	-	7x1,5	-	12x1.5
PX2-80.0	6,5		2	-	13,3	85,0%	0,83	-	7x1,5	-	12x1.5
PX2-80.0	8		2	-	15,8	86,5%	0,845	-	7x4 ή 12x2,5	-	12x2.5
PX2-80.0	12,5		2	-	23,4	86,5%	0,89	-	7x4 ή 12x2,5	-	12x2.5
PX2-100.0	3		6	-	7,0	77,0%	0,8	-	7x1,5	-	12x1,5
PX2-100.0	4		4	-	8,2	85,0%	0,83	-	7x1,5	-	12x1,5
PX2-100.0	6		4	-	13,2	81,5%	0,805	-	7x1,5	-	12x1,5
PX2-100.0	7,5		4	-	15,2	87,0%	0,82	-	7x2,5	-	12x2,5
PX2-100.0	9		4	-	18,1	86,0%	0,835	-	7x2,5	-	12x2,5
PX2-150.0	3		6	-	7,0	77,0%	0,8	-	7x1,5	-	12x1,5
PX2-150.0	4		4	-	8,2	85,0%	0,83	-	7x1,5	-	12x1,5
PX2-150.0	6		4	-	13,2	81,5%	0,805	-	7x1,5	-	12x1,5
PX2-150.0	6,6		6	-	14,9	82,0%	0,78	-	7x1,5	-	12x1,5
PX2-150.0	7,5		4	-	15,2	87,0%	0,82	-	7x2,5	-	12x2,5
PX2-150.0	9		4	-	18,1	86,0%	0,835	-	7x2,5	-	12x2,5
PX3-80.0	8		2	-	17,5	79,0%	0,84	-	4x4 + 4x1,5	-	(2x) 4x2,5 + 4x1,5
PX3-80.0	12,5		2	-	22,9	89,0%	0,885	-	4x4 + 4x1,5	-	(2x) 4x2,5 + 4x1,5
PX3-80.0	17,5		2	-	30,7	91,0%	0,905	-	4x10 + 4x1,5	-	(2x) 4x4 + 4x1,5
PX3-80.0	21		2	-	36,8	90,0%	0,915	-	4x10 + 4x1,5	-	(2x) 4x4 + 4x1,5
PX3-80.0	26		2	-	46,3	88,5%	0,915	-	4x10 + 4x1,5	-	(2x) 4x4 + 4x1,5
PX3-80.0	32		2	-	56,1	90,0%	0,915	-	4x16 + 4x1,5		(2x) 4x6 + 4x1,5
PX3-100.0	6,6		6	-	14,9	82,0%	0,78	-	7x1,5	-	12x1,5
PX3-100.0	7,5		4	-	15,2	87,0%	0,82	-	4x2,5 + 4x1,5	-	7x2,5 + 4x1,5
PX3-100.0	9		4	-	18,1	86,0%	0,835	-	4x2,5 + 4x1,5	-	7x2,5 + 4x1,5
PX3-100.0	12,5		4	-	24,3	87,5%	0,85	-	4x4 + 4x1,5	-	(2x) 4x2,5 + 4x1,5
PX3-100.0	15		4	-	28,5	90,5%	0,84	-	4x6 + 4x1,5	-	(2x) 4x2,5 + 4x1,5
PX3-100.0	18,5		4	-	35,1	89,0%	0,855	-	4x6 + 4x1,5	-	(2x) 4x2,5 + 4x1,5
PX3-100.0	22		4	-	46,0	88,0%	0,8	-	4x16 + 4x1,5	-	(2x) 4x6 + 4x1,5
PX3-100.0	28		4	-	55,3	87,0%	0,84	-	4x16 + 4x1,5	-	(2x) 4x6 + 4x1,5
PX3-150.0	6,6		6	-	14,9	82,0%	0,78	-	4x2,5 + 4x1,5	-	7x1,5+ 4x1,5
PX3-150.0	7,5		4	-	15,2	87,0%	0,82	-	4x2,5 + 4x1,5	-	7x2,5 + 4x1,5

Type	P2 Kw	Insulation Class	Nr. of Poles	I - Amp		Motor Eff. %	Cos	Cable DOL n_o /mm^2		Cable Y/Delta n_o /mm^2	
				~1Ph 230 V	~3Ph 400 V			230V	400 - 500 V	230V	400 - 500 V
PX3-150.0	9	F Standard Edition H Alternative	4	-	18,1	86,0%	0,835	-	4x2,5 + 4x1,5	-	7x2,5 + 4x1,5
PX3-150.0	12,5		4	-	24,3	87,5%	0,85	-	4x4 + 4x1,5	-	(2x) 4x2,5 + 4x1,5
PX3-150.0	13,5		6	-	29,4	86,5%	0,765	-	4x6 + 4x1,5	-	(2x) 4x2,5+ 4x1,5
PX3-150.0	15		4	-	28,5	90,5%	0,84	-	4x6 + 4x1,5	-	(2x) 4x2,5 + 4x1,5
PX3-150.0	18,5		4	-	35,1	89,0%	0,855	-	4x6 + 4x1,5	-	(2x) 4x2,5 + 4x1,5
PX3-150.0	22		4	-	46,0	88,0%	0,8	-	4x16 + 4x1,5	-	(2x) 4x6 + 4x1,5
PX3-150.0	28		4	-	55,3	87,0%	0,84	-	4x16 + 4x1,5	-	(2x) 4x6 + 4x1,5
PX4-150.0	28		4	-	55,3	87,0%	0,84	-	4x16 + 4x1,5	-	(2x) 4x6 + 4x1,5
PX4-150.0	37		4	-	68,0	92,0%	0,855	-	4x25 + 4x1,5	-	(2x) 4x10 + 4x1,5
PX4-150.0	45		4	-	82,0	91,5%	0,87	-	4x25 + 4x1,5	-	(2x) 4x10 + 4x1,5
PX4-150.0	55		4	-	98,0	92,5%	0,875	-	4x35 + 4x1,5	-	(2x) 4x16 + 4x1,5
PX4-150.0	70		4	-	124,0	92,5%	0,88	-	4x35 + 4x1,5	-	(2x) 4x16 + 4x1,5
PX4-150.0	75		2	-	129,0	94,0%	0,9	-	4x35 + 4x1,5	-	(2x) 4x16 + 4x1,5
PX4-200.0	28		4	-	55,3	87,0%	0,84	-	4x16 + 4x1,5	-	(2x) 4x6 + 4x1,5
PX4-200.0	37		4	-	68,0	92,0%	0,855	-	4x25 + 4x1,5	-	(2x) 4x10 + 4x1,5
PX4-200.0	45		4	-	82,0	91,5%	0,87	-	4x25 + 4x1,5	-	(2x) 4x10 + 4x1,5
PX4-200.0	55		4	-	98,0	92,5%	0,875	-	4x35 + 4x1,5	-	(2x) 4x16 + 4x1,5
PX4-200.0	70		4	-	124,0	92,5%	0,88	-	4x35 + 4x1,5	-	(2x) 4x16 + 4x1,5
PX4-200.0	6,6		6	-	14,9	82,0%	0,78	-	4x2,5 + 4x1,5	-	7x1,5+ 4x1,5
PX4-200.0	13,5		6	-	29,4	86,5%	0,765	-	4x6 + 4x1,5	-	7x2,5 + 4x1,5
PX4-200.0	17		6		38,5	85,0%	0,76		4x10 + 4x1,5	-	(2x) 4x4 + 4x1,5
PX4-200.0	20		6		45,5	85,5%	0,75		4x10 + 4x1,5	-	(2x) 4x4 + 4x1,5
PX4-200.0	22		6	-	46,0	88,5%	0,8	-	4x16 + 4x1,5	-	(2x) 4x6 + 4x1,5
PX4-200.0	25		6	-	52,0	87,5%	0,8	-	4x16 + 4x1,5	-	(2x) 4x6 + 4x1,5
PX4-200.0	30		6	-	57,0	92,0%	0,83	-	4x16 + 4x1,5	-	(2x) 4x6 + 4x1,5
PX4-200.0	37		6	-	69,0	91,0%	0,85	-	4x25 + 4x1,5	-	(2x) 4x10 + 4x1,5
PX4-300.0	28		4	-	55,3	87,0%	0,84	-	4x16 + 4x1,5	-	(2x) 4x6 + 4x1,5
PX4-300.0	37		4	-	68,0	92,0%	0,855	-	4x25 + 4x1,5	-	(2x) 4x10 + 4x1,5
PX4-300.0	45		4	-	82,0	91,5%	0,87	-	4x25 + 4x1,5	-	(2x) 4x10 + 4x1,5
PX4-300.0	55		4	-	98,0	92,5%	0,875	-	4x35 + 4x1,5	-	(2x) 4x16 + 4x1,5
PX4-300.0	70		4	-	124,0	92,5%	0,88	-	4x35 + 4x1,5	-	(2x) 4x16 + 4x1,5
PX4-300.0	17		6		38,5	85,0%	0,76		4x10 + 4x1,5	-	(2x) 4x4 + 4x1,5
PX4-300.0	20		6		45,5	85,5%	0,75		4x10 + 4x1,5	-	(2x) 4x4 + 4x1,5
PX4-300.0	22		6	-	46,0	88,5%	0,8	-	4x16 + 4x1,5	-	(2x) 4x6 + 4x1,5
PX4-300.0	25		6	-	52,0	87,5%	0,8	-	4x16 + 4x1,5	-	(2x) 4x6 + 4x1,5
PX4-300.0	30		6	-	57,0	92,0%	0,83	-	4x16 + 4x1,5	-	(2x) 4x6 + 4x1,5
PX4-300.0	37		6	-	69,0	91,0%	0,85	-	4x25 + 4x1,5	-	(2x) 4x10 + 4x1,5
PX4-300.0	45		6	-	86,0	91,5%	0,835	-	4x25 + 4x1,5	-	(2x) 4x10 + 4x1,5
PXGRIND2	6,5		2	-	13,3	85,0%	0,83	-	7x1,5	-	12x1.5
PXGRIND2	8		2	-	15,8	86,5%	0,845	-	7x4 ή 12x2,5	-	12x2.5
PXGRIND2	12,5		2	-	23,4	86,5%	0,89	-	7x4 ή 12x2,5	-	12x2.5

3 ~ Direct on –line starting DOL
Motor connection: Δ

1 Power Supply Cable + 1 Control Cable

Color Coding

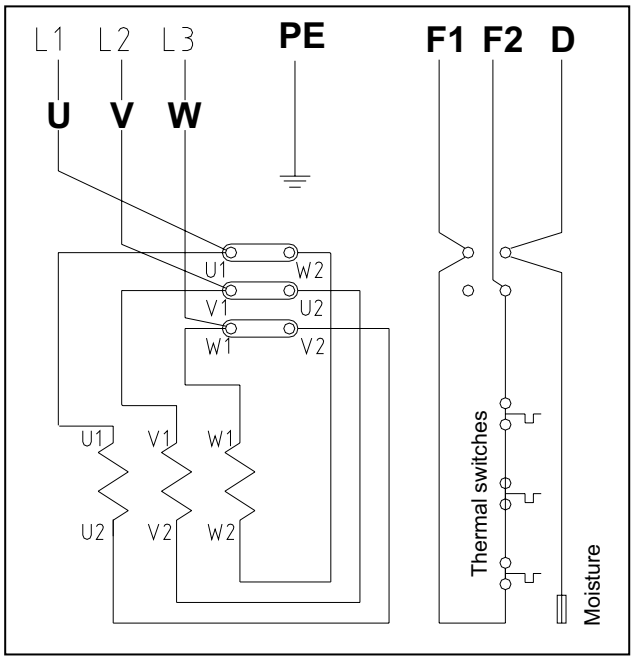
Power Supply	U	Black
	V	Brawn
	W	Grey
	PE	Yellow
Control	F1	Black
	F2	Brawn
	D	Grey

1 Power Supply and Control Cable

Color Coding

U	Black-1
V	Black-2
W	Black-3
PE	Yellow
F1	Black-4
F2	Black-5
D	Black-6

3~ Direct - on - line starting DOL
Motor connection : Δ



Internal Connection on Motor's Terminal Board

U1,	U2	:	Black
V1,	V2	:	Red
W1,	W2	:	Orange

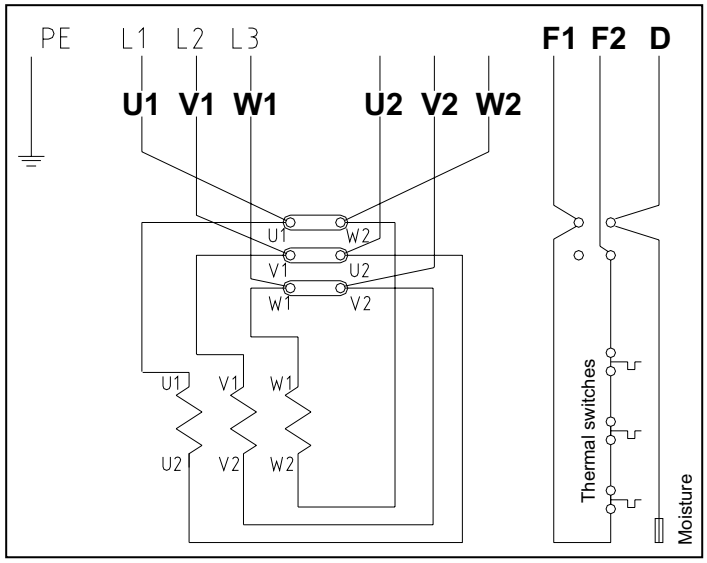
3 ~ Star-Delta starting Y- Δ
Motor connection: III Δ

2 Power Supply Cable + 1 Control Cable

Color Coding

Power Supply (cable1)	U1	Black
	V1	Brawn
	W1	Grey
	PE	Yellow
Power Supply (cable2)	U2	Black
	V2	Brawn
	W2	Grey
	PE	Yellow
Control	F1	Black
	F2	Brawn
	D	Grey

3~ Star-Delta starting Y-Δ
Motor connection : III Δ



1 Power Supply Cable + 1 Control Cable

Color Coding

Power Supply	U1	Black-1
	V1	Black-2
	W1	Black-3
	PE	Yellow
	U2	Black-4
	V2	Black-5
	W2	Black-6
	PE	Yellow
Control	F1	Black
	F2	Brawn
	D	Grey

1 Power Supply and Control Cable

Color Coding

U1	Black-1
V1	Black-2
W1	Black-3
U2	Black-4
V2	Black-5
W2	Black-6
PE	Yellow
F1	Black-7
F2	Black-8
D	Black-9

Internal Connection on Motor's Terminal Board

U1, U2 : Black
V1, V2 : Red
W1, W2 : Orange

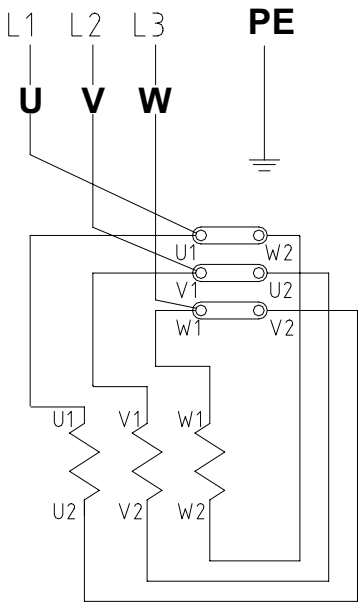
3 ~ Direct on-line starting DOL
Motor connection: Δ
With sensor PT100

1 Power Supply Cable
+ 1 Control Cable

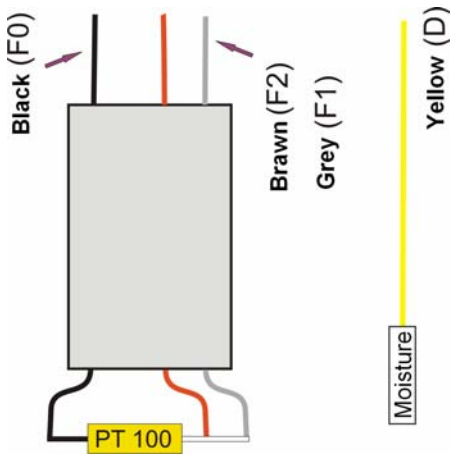
Color Coding

Power Supply	U	Black
	V	Brawn
	W	Grey
	PE	Yellow
Control	F0	Black
	F1	Grey
	F2	Brawn
	D	Yellow

MAIN CABLE OF POWER SUPPLY



CABLE OF CONTROL



Internal Connection on Motor's Terminal Board

U1,	U2	:	Black
V1,	V2	:	Red
W1,	W2	:	Orange

3 ~ Star-Delta Starting Y- Δ
Motor Connection: lll Δ
With sensor PT100

2 Power Supply Cable + 1 Control Cable

Color Coding

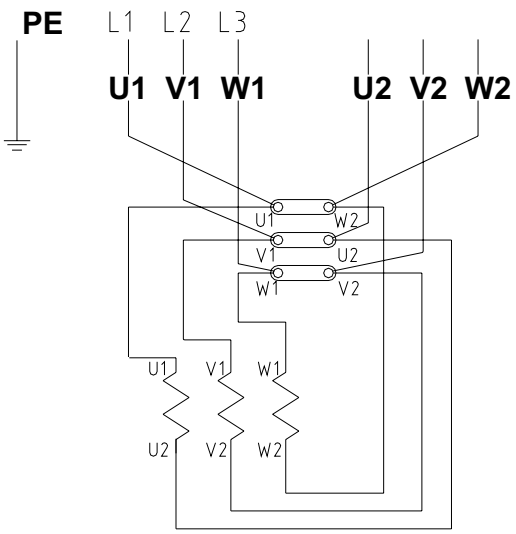
Power Supply (Cable1)	U1	Black
	V1	Brawn
	W1	Grey
	PE	Yellow
Power Supply (Cable2)	U2	Black
	V2	Brawn
	W2	Grey
	PE	Yellow
Control	F0	Black
	F1	Grey
	F2	Brawn
	D	Yellow

1 Power Supply Cable + 1 Control Cable

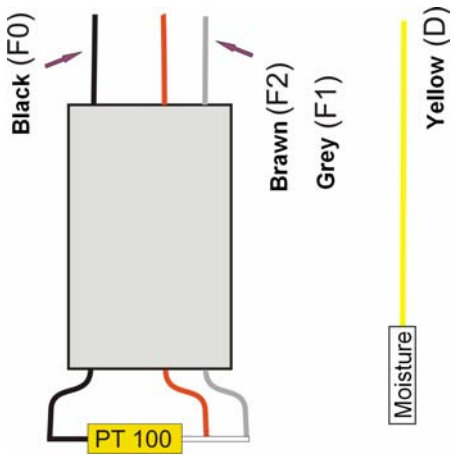
Color Coding

Power Supply	U1	Black-1
	V1	Black -2
	W1	Black -3
	PE	Yellow
	U2	Black -4
	V2	Black -5
	W2	Black -6
	PE	Yelloy
Control	F0	Black
	F1	Grey
	F2	Brawn
	D	Yellow

MAIN CABLE OF POWER SUPPLY



CABLE OF CONTROL



Internal Connection on Motor's Terminal Board

U1,	U2	:	Black
V1,	V2	:	Red
W1,	W2	:	Orange

PAPANTONATOS
Pumps service & engineering

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Tel: +30210 - 2431111,
Fax: +30210 - 2431601
web site: www.papantonatos.gr

PXFLOW

Declaration of Conformity

We herewith declare that the following sewage pump models:

PXFLOW PX0 , PX1 , PX2 , PX3 , PX4, PXGRIND2

comply with the provisions of
98/37/EEC
89/336/EEC
73/23/EEC

The following harmonized standards are applicable:
EN 809
EN 292/1
EN 292/2
EN 50081-2
EN 50082-2
EN 60034

The User's Manual, includes important safety recommendations for transportation, storage, installation, operation and maintenance of PAPANTONATOS SA pumps.

Athens 10 / 2 / 2008

Papantonatos SA

Panagiotis E. Stavropoulos
Quality Assurance Manager

CE

EN ISO 9001: 2000 certified